Energy Technologies Area

2016 Self-Assessment Project 3

A Self-Assessment of Storage Practices in the Building 70 Hallway Cabinets

September 9, 2016

Approved by:

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Introduction

Divisions belonging to the Energy Technologies Area (ETA) primarily occupy LBNL Building 70. This includes laboratory areas operated by the ESDR, BTUS, and EAEI divisions. Lab areas in Building 70 were inspected in later 2015 by ETA management to ensure that unauthorized equipment is not in use. This was a follow-up to the pressure reactor incident in 70-295. During these inspections, a number of unauthorized or damaged electrical equipment items were identified inside lab area storage cabinets. These items were immediately sent to salvage. However, it was not identified at the time that there were more items in storage outside of the lab areas in the building 70 hallway cabinets.

The hallways of the first and second floors of Building 70 contain a total of 74 storage cabinets. The contents of these cabinets have not been regularly checked or cleaned-out. A spot check identified that many of the cabinets contain very old equipment. As a result, this self-assessment was implemented to go through each cabinet and identify if any unauthorized or damaged electrical equipment is being stored. In addition, other items such as chemicals, gas cylinders, pressure vessels, etc. needed to be identified to ensure they were properly stored and/or authorized.

The ETA Safety Committee has selected electrical equipment safety as a self-assessment project. This is the third ETA self-assessment project for FY2016.

Requirements

Requirements for the safe handling of reactive metals are described in the following documents:

- LBNL Environmental Safety and Health Manual, PUB-3000, Chapter 14 "Electrical Equipment Safety Program"
- LBNL Environmental Health and Safety Manual, PUB-3000, Chapter 8 "Electrical Safety Program"
- LBNL Environmental Safety and Health Manual, PUB-3000, Chapter 20 "Waste Management"
- LBNL Excess Property: http://procurement.lbl.gov/welcome-to-procurement-property/property-management/property-management-excess/
- ETA Integrated Safety Management (ISM) Plan- Section 5, "Roles and Responsibilities"

LBNL has initiated a laboratory area housekeeping program. This program encourages each division to identify and implement housekeeping improvements in their lab areas in order to ensure safe and efficient work areas. The LBNL "A Clean and Safe Place for Science" website can be found at: http://cleanup.lbl.gov

The Building 70 hallway cabinets are not approved for storage of hazardous materials or gases. They are all located in the building exit corridors which must remain free of hazards that could prevent building egress by personnel.

All ETA personnel are required to maintain a safe work area, ensure equipment used is in good operating condition, and report any safety issues immediately to their supervisor for follow-up and corrective action.

Methodology

The following methodology was used to conduct this self-assessment:

1. The self-assessment team made field observations of contents in each storage cabinet. See Attachments 1 and 2 for the cabinet locations. The information collected includes status of the following:
    a. Identity of the cabinet owner/division
    b. Electrical equipment
    c. Chemicals and Gases
    d. Samples
    e. Pressure Vessels
    f. Sharps or other hazardous items
    g. Noteworthy practices

2. Any unauthorized equipment identified that did not have an owner identified was sent to salvage.

3. Any unauthorized or damaged equipment identified that had a current owner was set aside for their review. If they wanted to keep the equipment, it was placed into the Electrical Equipment Inspection Program (EEIP) database for inspection/approval by the Engineering Division electrical inspectors. If they no longer needed the items, they were sent to salvage.

4. Any unauthorized chemicals, gas cylinders, or samples identified were collected and disposed as hazardous waste.

5. A summary of the observations, noteworthy practices, and suggested improvements was compiled by the self-assessment team and presented in this report.

6. The following personnel participated on the self-assessment team:
    a. Ron Scholtz- ETA Safety Manager
    b. Susan Synarski- ETA Building Manager

7. The scope of this project applied to the following:
    a. Building 70 hallway cabinets belonging to ETA on the first and second floors.

8. The following were not included in the scope of this self-assessment:
    a. Cabinets in Building 70 belonging to non-ETA divisions such as Facilities, Earth Sciences, and Nuclear Sciences. Note: these cabinets were checked, but the disposition of the contents was left to the responsible division.
    b. Office and break areas
    c. Lab area cabinets

Summary of Findings, Observations and Noteworthy Practices

The following is a summary of findings, observations, and noteworthy practices identified by the self-assessment team. Significant items identified in the findings section are each entered into the Corrective Action Tracking System "CATS" to ensure these are addressed and completion documented.

Findings:

1. Equipment in the following cabinets contains equipment that was identified as items that the researchers wanted to keep. They were not in the EEIP database or NRTL approved (green sticker). These items were placed in the EEIP database as a result of this self-assessment. However they still need to be inspected and approved by the Engineering Division electrical inspectors. Items that fail will require repair or salvage. (**CATS #10027-1):**
    a. 7C, 7D, 10A (Zormpa)
    b. 12A, 12B, 13A, 14A (Kirchstetter)
    c. 23B (Cairns)
2. Hazardous materials were identified in cabinets 10D, 12B, 18A, 18B, 18C, 18D. The hallway cabinets are not designed or approved for storage of hazardous materials. These items were removed and properly disposed as hazardous waste. **Completed**
    a. Paint and glues in cabinet (10D)
    b. Gas cylinders in cabinet (12B, 18C, 18D)
    c. Chemical containers in cabinet (18B)
    d. Samples in cabinet (18A, 18B, 18C, 18D, 23A, 23C)

Observations

1. All B70 hallway cabinets were inspected. See Attachment 3 for a summary of the results found.
2. Approximately 12 yards or 1,600 pounds of electronics equipment were sent to salvage.
3. The remaining electronic equipment items were inventoried and placed into the Electrical Equipment Inspection Program (EEIP) database for future inspection. Those items that pass or are repaired will remain in the cabinets for future use.
4. A number of old gas cylinders were removed. These contained either a mixture of flammable gas or Carbon Monoxide for calibrations. Some of these dated back to the 1970's. All were properly disposed as hazardous waste.
5. A 5-gallon pail of flammable liquid paint was removed and disposed along with a box of smaller paint containers. All were disposed as hazardous waste.
6. A number of boxes containing very old and expired "Kitigawa" air sampling tubes were removed. The absorbent materials in each tube contain potentially toxic chemicals. All tubes were properly disposed as hazardous waste.
7. A number of old samples were identified and properly disposed. These ranged from absorbent tubes to large metal pipes containing soil core samples. These ranged from the 1970-s to the 1990's. All were properly disposed as hazardous waste. The soil core samples are pending review by the Radiation Protection Group (RPG) prior to disposal.
8. No pressure reactor vessel devices were identified in the hallway cabinets.
9. Photographs obtained during this self assessment can be viewed by going to the following link: https://drive.google.com/a/lbl.gov/folderview?id=0B9EFgUuohxgzcUdpTzZTZklDM2s&usp=sharing

Noteworthy Practices:

1. As a result of this self-assessment, each cabinet was clearly identified with the cabinet ID number, owner name and extension. Cabinets that are now empty are identified as "unassigned". See photo in attachment 4.
2. As a result of this self-assessment, a label was affixed to the inside of each cabinet door stating "NOTICE: No Chemical Storage. All Electrical Equipment Must be LBNL Approved". See photo in Attachment 4.
3. The building manager put a centralized key holder together. This allows for easier access to the cabinets when needed for spot checks and inspections. See photo in Attachment 4.
4. Some of the cabinets that have current owners were very well organized and maintained. This includes cabinets 22A-F (J. Slack).

Conclusions and Future Improvements

Conclusions

The following conclusions summarize the results of this self-assessment project:

1. There were many damaged and unauthorized electrical equipment items identified in the cabinets.
2. Better control and management of the cabinets is needed in the future to ensure this does not reoccur.
3. Removal of the old defective electrical equipment will prevent unauthorized use and possible worker injury.
4. Removal of the old chemicals and gases will prevent possible hazardous conditions inside and nearby the cabinets in the event of a fire.
5. A number of cabinets were completely cleared and space made available to other current researchers in need of storage for dry goods outside of their lab areas.

Recommendations and Suggested Future Improvements

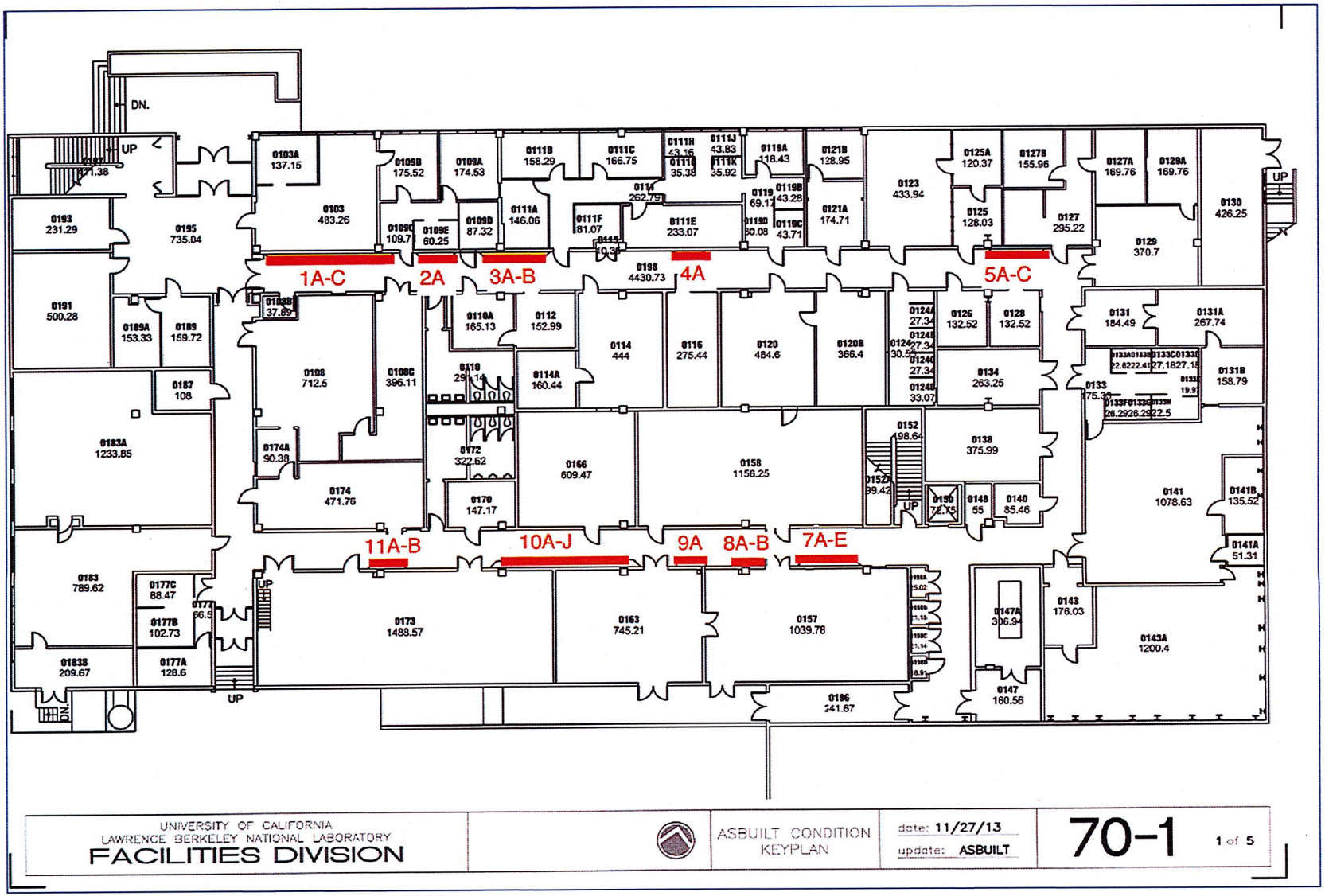
The following recommendations and improvements should be made in order to improve use of the hallway cabinets:

1. The clean out of the cabinets needs to continue. There are still cabinets used for storage of old journals and paper files. These are combustible in the event of a fire.
2. The Building Manager should plan an organized "housekeeping day" on at least an annual basis in Building 70. This will allow researchers to more easily salvage unwanted equipment and dispose of old chemicals/samples in their lab areas. The contents of the hallway cabinets should be included in this effort.
3. As funding becomes available, some of the unnecessary or damaged cabinets should be removed from the hallways. The cabinets seem to be places to "file away" equipment that is no longer needed. Having fewer cabinets will require that their use be left for only those items that are really needed.
4. In the event that a cabinet owner retires or leaves LBNL, either a new owner must be identified or the contents removed and sent to salvage. This should be part of the employment termination process.
5. The ETA Building Manager and Safety Manager should perform a follow-up self-inspection at least annually. This will determine if the cabinet owners are up to date and that storage

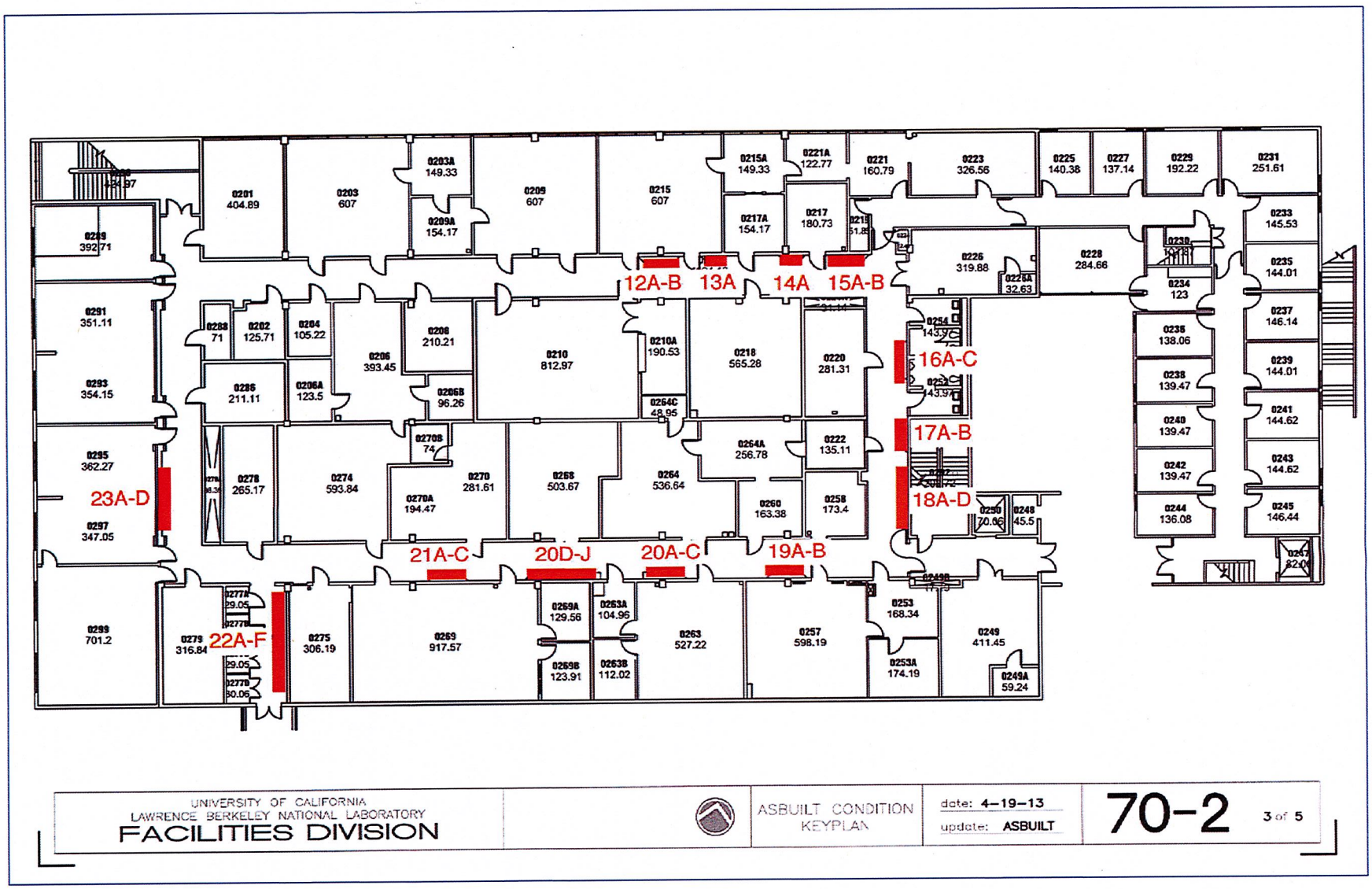
meets the established criteria. This is outlined in the recently issued Safety Alert (Attachment 5).

6. Two cabinets (21A and 21B) are locked and could not be accessed with the current key set. A locksmith is needed to open these cabinets so they can be inspected and cleaned-out if needed. There is no owner identified and is designated as "unassigned".
7. Although no food storage was identified in the storage cabinets during the self-assessment, a further restriction should be enforced for potential future storage of food. A recent building rat infestation demonstrated how carefully food should be stored in the building to prevent rodent access.
8. There are a small number of cabinets assigned to other non-ETA divisions. The self-assessment team determined the owners and requested they access and inspect their contents. Earth Sciences performed a clean out of a cabinet containing unknown equipment and samples that was not clearly identified prior to the self-assessment. They have promptly addressed this.
9. A "Safety Alert" communications was developed and distributed outlining requirements for use of the hallway cabinets (Attachment 5). This safety alert needs to be redistributed periodically to remind the cabinet owners of these requirements.
10. There are similar cabinets located on the second floor of Building 90 that also contain stored equipment. These should be inspected and organized in a similar manner to this self-assessment.
11. The results of this self-assessment will be made available to ETA personnel so that they are aware of issues identified and future plans (**Completed**- Posted on ETA Safety website and announced in division communications).

ATTACHMENT 1
Building 70 First Floor Storage Cabinet Location Map



ATTACHMENT 2
Building 70 Second Floor Storage Cabinet Location Map



ATTACHMENT 3
Building 70 Hallway Cabinet Survey Summary

Cabinet #	Owner	Division	Electrical Equipment Identified	Other Items Identified	Comments
1A	Hugo Destaillats	EAEI	None	Empty boxes and coolers.	Cabinet needs to be cleaned out of unwanted items.
1B	Yoga Group	LBNL			Dry storage of yoga supplies
1C	Division Office	ESDR	None		Mostly empty
2A	Elton Cairns	ESDR	None	Files and publications (paper)	None
3A	Division Office	ESDR	None		Clean out. Enter salvage order.
3B	Division Office	ESDR			
4A	Arlon Hunt	ESDR	None	Files and publications (paper)	Clean out. Enter salvage order.
5A	Elton Cairns	ESDR	None	Files and publications (paper)	None
5B	Susan Synarski/ Ron Scholtz	ETA	None	Spare boxes, labels, tools for daily use by Building Manager and Safety Manager	Previous contents removed to free space for current users.
5C	Elton Cairns	ESDR	None	Files and publications (paper)	None
6A	Lara Gundel	EAEI	None	Files and publications (paper)	None
6B	Hugo Destaillats	EAEI	Gas sampling equipment and other dry storage		None
6C	Alan Poon	Nuclear Sciences			
6D	Cheng-Ju Lin	Physics			
6E	Cheng-Ju Lin	Physics			
7A	Eoin Brodie	Earth Sciences			Lab supplies

Cabinet #	Owner	Division	Electrical Equipment Identified	Other Items Identified	Comments
7B	Janitorial	Facilities			Janitorial supplies
7C	Vasileia Zormpa	ESDR	Old electrical equipment. Needs to be inventoried in the EEIP		
7D	Vaseleia Zormpa	ESDR	Old electrical equipment. Needs to be inventoried in the EEIP		
7E	Eoin Brodie	Earth Sciences			Lab supplies
8A	Harry Beller	Earth Sciences			Lab supplies
8B	Eoin Brodie	Earth Sciences			Lab supplies
9A	Vaseleia Zormpa	ESDR		Spare Parts	
10A	Vaseleia Zormpa	ESDR	Old electrical equipment. Needs to be inventoried in the EEIP		
10B	Vaseleia Zormpa	ESDR		Lab Dry Supplies	None
10C	Vaseleia Zormpa	ESDR	Old equipment removed and salvaged		Basically empty
10D	Unassigned		Old equipment removed and salvaged		Empty
10E	Unassigned		Old equipment removed and salvaged		Empty
10F	Berkeley Lab Postdoc Association	BLPA			Activity supplies
10G	Unassigned		Old equipment removed and salvaged		Empty
10H	Peter Therkelsen	BTUS	Old equipment removed and salvaged		
10I	Peter Therkelsen	BTUS	Old equipment removed and		

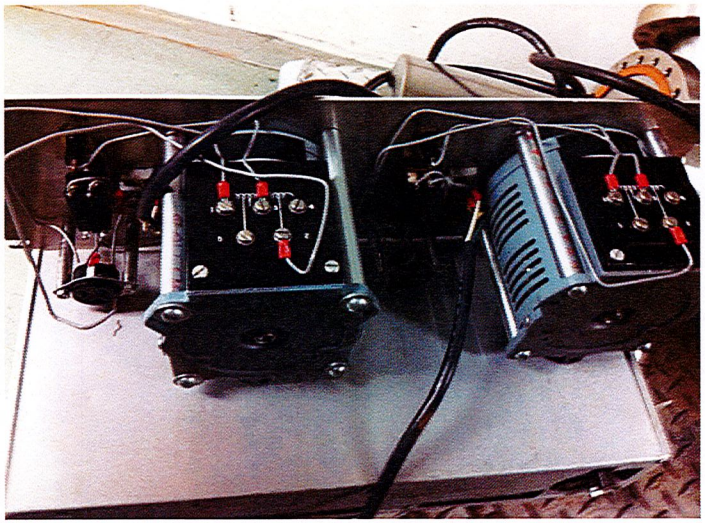
Cabinet #	Owner	Division	Electrical Equipment Identified	Other Items Identified	Comments
			salvaged		
10J	Peter Therkelsen	BTUS	Old equipment removed and salvaged		
11A	Unassigned		Old equipment removed and salvaged		Empty
11B	Maintenance	Facilities			Pipe labels
12A	Tom Kirchstetter	EAEI	Equipment needs to be inventoried in the EEIP		
12B	Tom Kirchstetter	EAEI	Equipment needs to be inventoried in the EEIP	Refrigerant gas cylinders removed and stored in lab area	
13A	Tom Kirchstetter	EAEI	Equipment needs to be inventoried in the EEIP		
14A	Tom Kirchstetter	EAEI	Equipment needs to be inventoried in the EEIP		
15A	Janitorial	Facilities			Janitorial supplies
15B	Janitorial	Facilities			Janitorial supplies
16A	Art Poskanzer	NSRN			Old data tapes
16B	Tom Kirchstetter	EAEI	Equipment needs to be inventoried in the EEIP		
16C	Unassigned	None	Old electrical cables went to salvage		Empty
17A	Chinmayee Subban	ESDR	Old electrical equipment sent not salvage		Cabinet completely cleared of old storage. Now being used for storage of lab dry goods.
17B	Chinmayee Subban	ESDR	Old electrical equipment sent to salvage		Cabinet completely cleared of old storage. Now being used for storage of lab dry goods.
18A	Randy Maddalena	EAEI	Old electrical equipment went to salvage		Cleared out and available for use by current user.
18B	Randy Maddalena	EAEI	Old electrical equipment sent to salvage	A number of old samples removed and disposed.	Cleared out and available for use by current user.

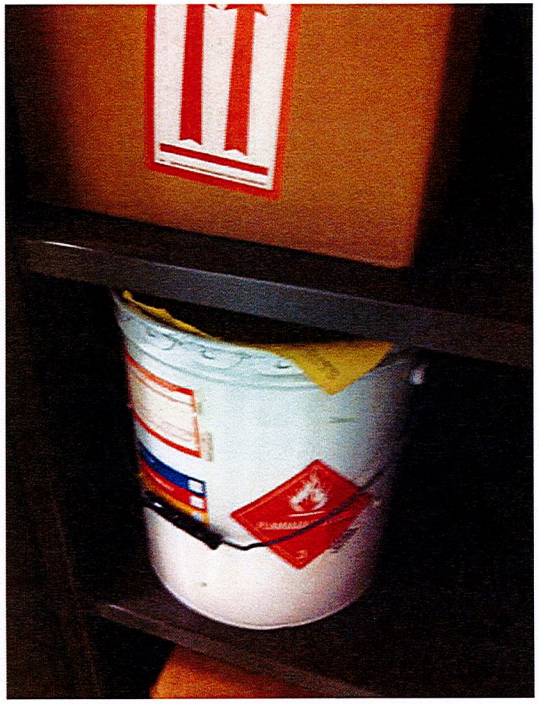
Cabinet #	Owner	Division	Electrical Equipment Identified	Other Items Identified	Comments
18C	Randy Maddalena	EAEI	Old electrical equipment sent to salvage	A number of old samples removed and disposed. Hazardous chemical containers removed and disposed.	Cleared out and available for use by current user.
18D	Randy Maddalena	EAEI	Old electrical equipment sent to salvage	A number of small gas cylinders removed and disposed. Old "Kitigawa" sample tubes removed and disposed.	Cleared out and available for use by current user.
19A	Unassigned	None			Stacked Lateral files
19B	Unassigned	None			Stacked Lateral files
20A	Randy Maddalena	EAEI			Lab dry supplies
20B	Randy Maddalena	EAEI			Empty
20C	Lara Gundel	EAEI			Lab dry supplies
20D	Adam Weber	ESDR			Lab dry supplies
20G	Unassigned	None			Empty
20H	Marion Russell	EAEI			Lab dry supplies
20I	Vince Battaglia	ESDR			Lab dry supplies
20J	Gao Liu	ESDR			Lab dry supplies
21A	Unassigned	None			Door is locked and no key is available. Unable to inspect.
21B	Unassigned	None			Door is locked and no key is available. Unable to inspect.
21C	Jonathan Slack	BTUS	Pumps	Vacuum chamber parts	
22A	Jonathan Slack	BTUS		Journals	
22B	Jonathan Slack	BTUS		Parts bins	
22C	Raymond Dodd	EAEI		Journals	
22D	Jonathan Slack	BTUS		Parts and misc. storage	
22E	Jonathan Slack	BTUS		Misc. vacuum chamber parts	
22F	Jonathan Slack	BTUS			Padlocked and no key is

Cabinet #	Owner	Division	Electrical Equipment Identified	Other Items Identified	Comments
					available. Unable to inspect.
23A	Vince Battaglia	ESDR			Lab dry supplies
23B	Elton Cairns	ESDR	Old electrical equipment. Needs to be inventoried in the EEIP		
23C	Randy Maddalena	EAEI	Old electrical equipment removed and sent to salvage	Soil core samples from radon project	
23D	Randy Maddalena	EAEI	Old electrical equipment removed and sent to salvage	Spare parts	

ATTACHMENT 4
Photos


GRAINGER





ATTACHMENT 5
Hallway Cabinet Safety Alert

Energy Technologies Area

SAFETY ALERT

June 16, 2016

Hallway Storage Cabinets

There are a number of storage cabinets located in the hallways of Buildings 70 and 90. A recent inspection of the B70 cabinets revealed a large quantity of old non-approved electrical equipment, compressed gas cylinders, paints/glues, and unidentified samples. Many cabinets containing unclaimed items have already been cleaned out and the contents sent to salvage or disposal. This effort is on going.

The following procedures are now being implemented for the hallway storage cabinets:

1. Cabinets are being assigned to designated ETA personnel. The designated person is responsible for ensuring the cabinet contents are maintained. The name and extension of the responsible person is affixed to the outside of each cabinet door.

2. Any electrical equipment stored in the cabinets must be either listed by a Nationally Recognized Testing Lab (NRTL) or has passed a LBNL electrical safety inspection. A green "AHJ Approval" sticker must be affixed to each item.

3. Equipment that has failed electrical inspection is identified with a red "AHJ Fail" sticker. These items must not be stored in the cabinets. If an item has failed, it should either be repaired immediately or sent to salvage.

4. Any defective or unapproved equipment should not be stored in the cabinets. This includes defective non-electrical items such as pressure vessels, tools, and regulators. Defective equipment must either be repaired or sent to salvage.

4. Under no circumstances are hazardous materials or compressed gases stored in the hallway cabinets. These should be placed in the proper storage cabinets located inside the lab areas.

5. Storage of any non-hazardous samples should be clearly identified. This includes the sample type, date, and owner name.

6. Storage of combustibles such as paper and cardboard should be minimized. In addition, the doors must remain latched shut when not in use. These cabinets are located in an exit corridor and precautions must be made to ensure the corridors can be used for exiting during an emergency.

7. An inspection of all hallway cabinet contents will be performed at least once a year and is coordinated by the Building Manager. The designated cabinet owner will be notified of any items in storage that need to be removed or inspected.

If you need a hallway storage cabinet for storage of equipment, please contact the ETA Building Manager, Susan Synarski at X2534. If you have equipment that requires inspection or repair, please contact the ETA Safety Manager, Ron Scholtz at X8137.